THAT WHICH IS CLAIMED IS:

1. A reactor system comprising:

an elongated tube having a tube length and a tube diameter which define a reaction zone; wherein contained within the reaction zone is a packed bed of shaped support material; and wherein the shaped support material has a hollow cylinder geometric configuration defined by a nominal length, a nominal outside diameter and a nominal inside diameter such that the ratio of the nominal length to the nominal outside diameter is in the range of from about 0.5 to about 2, and further such that,

when the tube diameter is less than 28 mm, the ratio of the nominal outside diameter to the nominal inside diameter exceeds about 2.3, and the ratio of the tube diameter to the outside diameter is in the range of from about 1.5 to about 7, and,

when the tube diameter is at least 28 mm, the ratio of the nominal outside diameter to the nominal inside diameter exceeds about 2.7, and the ratio of the tube diameter to the outside diameter is in the range of from about 2 to about 10.

2. A reactor system as recited in claim 1, wherein

the tube diameter is in the range of from 28 mm to about 60 mm, and

the ratio of the nominal outside diameter to the nominal inside diameter is

at least about 4.5, when the outside diameter is in the range of from about 10.4 mm to about 11.6 mm; or

greater than about 3.4, when the outside diameter is in the range of from about 9.4 mm to about 10.6 mm; or

at least about 2.6, when the outside diameter is in the range of from about 8.4 mm to about 9.6 mm.

3. A reactor system as recited in claim 2, wherein the ratio of the nominal outside diameter to the nominal inside diameter is

at least about 4.5, when the outside diameter is in the range of from about 10.4 mm to about 11.6 mm;

at least about 3.6, when the outside diameter is in the range of from about 9.4 mm to about 10.6 mm; or

in the range of from about 2.6 to about 7.3, when the outside diameter is in the range of from about 8.4 mm to about 9.6 mm.

4. A reactor system as recited in claim 1, wherein the tube diameter is about 39 mm.

5. A reactor system as recited in claim 1, wherein the inside diameter of the hollow cylinder geometric configuration is at least about 0.2 mm.

6. A reactor system as recited in claim 1 wherein the ratio of nominal outside diameter to nominal inside diameter is in the range of from about 2.6 to about 500, when the tube diameter is less than 28 mm, and in the range of from about 3.0 to about 500, when the tube diameter is at least 28 mm.

7. A reactor system as recited in claim 6, wherein the ratio of nominal outside diameter to nominal inside diameter is in the range of from about 2.9 to about 200, when the tube diameter is less than 28 mm, and in the range of from about 3.3 to about 250, when the tube diameter is at least 28 mm.

8. A reactor system as recited in claim 1, wherein the tube length is in the range of from about 3 to about 15 meters.

9. A reactor system as recited in claim 1, wherein at least 50 percent of the packed bed comprises the shaped support material.

10. A reactor system as recited in of claims 1, wherein the ratio of the tube diameter to the nominal outside diameter in the range of from about 2 to about 6, when the tube diameter is less than 28 mm, and in the range of from about 2.5 to about 7.5, when the tube diameter is at least 28 mm.

11. A reactor system as recited in claim 10, wherein the ratio of the tube diameter to the nominal outside diameter in the range of from about 2.5 to about 5, when the tube diameter is less than 28 mm, and in the range of from about 3 to about 7, when the tube diameter is at least 28 mm.

12. A reactor system as recited in claim 1, wherein the shaped support material comprises predominantly alpha-alumina, and the packed bed has a tube packing density greater than about 550 kg per cubic meter.

13. A reactor system as recited in claim 1, wherein the shaped support material supports a catalytic component.

14. A reactor system as recited in claim 13, wherein the catalytic component comprises silver.

15. A process for manufacturing ethylene oxide, said process comprises:

providing a reactor system as recited in claim 14, wherein the elongated tube has an inlet tube end and an outlet tube end;

introducing into the inlet tube end a feedstock comprising ethylene and oxygen; and

withdrawing from the outlet tube end a reaction product comprising ethylene oxide and unconverted ethylene, if any.

16. A process as recited in claim 15, wherein the reaction zone is maintained under suitable ethylene oxidative reaction conditions including a temperature in the range of from about 150°C to about 400°C and a

pressure is in the range of from about 0.15 MPa to about 3 MPa.

17. A method of using ethylene oxide for making ethylene glycol, an ethylene glycol ether or an 1,2-alkanolamine comprising converting ethylene oxide into ethylene glycol, the ethylene glycol ether, or the 1,2-alkanolamine, wherein the ethylene oxide has been obtained by the process for preparing ethylene oxide as recited in claim 15.

18. A catalyst, wherein the catalyst comprises silver supported by a shaped support material which has a hollow cylinder geometric configuration defined by a nominal length, a nominal outside diameter and a nominal inside diameter such that

the ratio of the nominal length to the nominal outside diameter is in the range of from about 0.5 to about 2,

the ratio of the nominal outside diameter to the nominal inside diameter exceeds about 2.7, and

the ratio of the tube diameter to the outside diameter is in the range of from about 2 to about 10.

19. A reactor system comprising:

an elongated tube having a tube length and a tube diameter which define a reaction zone; wherein contained within the reaction zone is a packed bed of shaped support material; and wherein the shaped support material has a hollow cylinder geometric configuration defined by a nominal length, a nominal outside diameter and a nominal inside diameter such that

the ratio of the nominal length to the nominal outside diameter is in the range of from about 0.5 to about 2, and

the ratio of the nominal outside diameter to the nominal inside diameter provides a positive test result, and further such that

the ratio of the tube diameter to the nominal outside diameter is in the range of from about 1.5 to about 7, when the tube diameter is less than 28 mm, and in the range of from about 2 to about 10, when the tube diameter is at least 28 mm;

wherein "positive test result" is defined by a decrease of the quotient of a numerical value of the pressure drop per unit length of the packed bed and a numerical value of the packing density, which numerical values are obtained by testing the packed bed in a turbulent flow of nitrogen gas at a pressure of 1.136 MPa (150 psig), relative to a comparison quotient of numerical values obtained in an identical manner, except that the hollow cylinder geometric configuration of the same support material is defined by

a nominal outside diameter of 6 mm and a nominal inside diameter of 2.6 mm, when the tube diameter is less than 28 mm, and a nominal outside diameter of 8 mm and a nominal inside diameter of 3.2 mm, when the tube diameter is at least 28 mm, and

a ratio of the nominal length to the nominal outside diameter of 1.

20. A reactor system as recited in claim 19, wherein the hollow cylinder geometric configuration is defined such that,

when the tube diameter is less than 28 mm, the ratio of the nominal outside diameter to the nominal inside diameter exceeds about 2.3, and,

when the tube diameter is at least 28 mm, the ratio of the nominal outside diameter to the nominal inside diameter exceeds about 2.7.

21. A reactor system as recited in claim 19, wherein

the tube diameter is in the range of from 28 mm to about 60 mm, and

the ratio of the nominal outside diameter to the nominal inside diameter is

at least about 4.5, when the outside diameter is in the range of from about 10.4 mm to about 11.6 mm; or

greater than about 3.4, when the outside diameter is in the range of from about 9.4 mm to about 10.6 mm; or

at least about 2.6, when the outside diameter is in the range of from about 8.4 mm to about 9.6 mm.

22. A reactor system as recited in claim 21, wherein the ratio of the nominal outside diameter to the nominal inside diameter is

at least about 4.5, when the outside diameter is in the range of from about 10.4 mm to about 11.6 mm;

at least about 3.6, when the outside diameter is in the range of from about 9.4 mm to about 10.6 mm; or

in the range of from about 2.6 to about 7.3, when the outside diameter is in the range of from about 8.4 mm to about 9.6 mm.

23. A reactor system as recited in claim 19, wherein the tube diameter is about 39 mm.

24. A reactor system as recited in claim 19, wherein the inside diameter of the hollow cylinder geometric configuration is at least about 0.2 mm.

25. A reactor system as recited in claim 19, wherein the ratio of nominal outside diameter to nominal inside diameter is in the range of from about 2.6 to about 500, when the tube diameter is less than 28 mm, and in the range of from about 3.0 to about 500, when the tube diameter is at least 28 mm.

26. A reactor system as recited in claim 25, wherein the ratio of nominal outside diameter to nominal inside

diameter is in the range of from about 2.9 to about 200, when the tube diameter is less than 28 mm, and in the range of from about 3.3 to about 250, when the tube diameter is at least 28 mm.

27. A reactor system as recited in claim 19, wherein the tube length is in the range of from about 3 to about 15 meters.

28. A reactor system as recited in claim 19, wherein at least 50 percent of the packed bed comprises the shaped support material.

29. A reactor system as recited in claim 19, wherein the ratio of the tube diameter to the nominal outside diameter in the range of from about 2 to about 6, when the tube diameter is less than 28 mm, and in the range of from about 2.5 to about 7.5, when the tube diameter is at least 28 mm.

30. A reactor system as recited in claim 29, wherein the ratio of the tube diameter to the nominal outside diameter in the range of from about 2.5 to about 5, when the tube diameter is less than 28 mm, and in the range of from about 3 to about 7, when the tube diameter is at least 28 mm.

31. A reactor system as recited in claim 19, wherein the shaped support material comprises predominantly alpha-alumina, and the packed bed has a tube packing density greater than about 550 kg per cubic meter.

32. A reactor system as recited in claim 19, wherein the shaped support material supports a catalytic component.

33. A reactor system as recited in claim 32, wherein the catalytic component comprises silver.

34. A process for manufacturing ethylene oxide, said process comprises:

providing a reactor system as recited in claim 33, wherein the elongated tube has an inlet tube end and an outlet tube end;

introducing into the inlet tube end a feedstock comprising ethylene and oxygen; and

withdrawing from the outlet tube end a reaction product comprising ethylene oxide and unconverted ethylene, if any.

35. A process as recited in claim 34, wherein the reaction zone is maintained under suitable ethylene oxidative reaction conditions including a temperature in the range of from about 150°C to about 400°C and a pressure is in the range of from about 0.15 MPa to about 3 MPa.

36. A method of using ethylene oxide for making ethylene glycol, an ethylene glycol ether or an 1,2-alkanolamine comprising converting ethylene oxide into ethylene glycol, the ethylene glycol ether, or the 1,2-alkanolamine, wherein the ethylene oxide has been obtained by the process for preparing ethylene oxide as recited in claim 34.